

From: Jim Stewart
Sent: Friday, July 22, 2005 10:03 AM
To: Dabbs, Paul
Subject: Comment: FRE-FLO technology could save water

Comment on the Public Review Draft of the *California Water Plan*

Attn: Paul Dabbs, Chief
Water Resources Evaluation Section
Statewide Water Planning Branch
California Department of Water Resources
PO Box 942836
Sacramento, CA 94236-0001

FRE-FLO technology saves water
Dear Paul Dabbs,

I was at the California Water Plan Public meeting, 6/22 in LA. I would like to provide some information on how California could reduce agricultural water use over 20% while producing higher quality crops.

FRE-FLO is a technology that uses physical chemistry (no chemicals, electricity or magnets) to transform some of the dissolved calcium ions into calcium carbonate microcrystals which means hard pan formation is essentially eliminated. (See attached description of How FRE-FLO Works.) In fact, the microcrystals have been shown to actually reduce existing hard pan. This improves soil permeability and water penetration and makes more water and minerals available to the plants. The only maintenance normally required is a simple annual cleaning (more cleanings could be necessary in the case of dirty water).

FRE-FLO is very cost-effective

A FRE-FLO can pay for itself in the first year from reduced water costs, elimination of acid treatments, and increase in crop value. As an example, for a 150 acre farm using 450 acre-feet of irrigation water per year, an 8" FRE-FLO would cost about \$49,000 to install and maintain over 10 years. A 20% water savings valued at \$100 per acre foot would save \$90,000 over 10 years. Eliminating usage of 35 gallons of sulfuric acid per acre-foot per year could save \$158,000 over 10 years (including the costs of maintenance/replacement of the injection equipment). Thus the FRE-FLO would pay for itself in less than 3 years. In addition, some growers have found a seasonal increase in crop value of \$1,000 per acre, which would mean \$1.5 million additional revenue over 10 years, and a payback period of a few months! (Note that the size of the FRE-FLO required varies with the flow rate of the irrigation pump.)

Thus, 20% water savings over 10 years would cost \$54 per acre-foot saved. (Note that some growers using poor quality water report a 50% water savings, which would mean FRE-FLO costs only \$22 per acre-foot.) However, these numbers do not include the savings from the elimination of acid use (which also has huge environmental benefits),

nor the increased value of the crop, which completely pay for the FRE-FLO by themselves, making this a cost-free water savings technology. We also point out that FRE-FLO never wears out, so that its capital costs can be amortized over 20 or 30 years, meaning the cost per acre-foot saved could drop to half or less of the above numbers.

FRE-FLO Never Wears Out

FRE-FLO has no moving parts. The pressure drop (see attached diagram) is caused by an increased diameter chamber. A non-destructive catalytic metal comb-like arrangement causes turbulence and promotes the formation of the microcrystals of calcium carbonate.

FRE-FLO Allows Good Use of Poor Quality Water

FRE-FLO makes the use of poor quality water effective for agriculture, freeing up good quality water for drinking and the environment.

Attached are the following materials:

- Potential Benefits of FRE-FLO for Agriculture
- Higher Yields With Less Water (Western Farms Quarterly Newsletter)
- A UNIQUE APPROACH TO REDUCING WATER USE AND AMENDING SOIL (Western Farms Quarterly Newsletter)
- Water Significantly Reduced for Grapes (Western Farms Quarterly Newsletter)
- How FRE-FLO Works To Improve Plant Growth
- Reports of the Effects of the FRE-FLO In Agricultural Applications

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